LETTERS TO THE EDITOR

Regarding "Increased 18F-fluorodeoxyglucose uptake in abdominal aortic aneurysms in positron emission/computed tomography is associated with inflammation, aortic wall instability, and acute symptoms"

The excellent study by Reeps et al demonstrated increased aortic 18F-fluorodeoxyglucose (18F-FDG) metabolism measured by positron emission tomography (PET) CT scans in patients with asymptomatic abdominal aortic aneurysms (AAAs) compared with healthy controls (mean maximum standard uptake values [SUV_{max}], 3.5 ± 0.6 vs 3.0 ± 0.5, respectively; $P < .05$).[1] Furthermore, patients with symptomatic AAAs had significantly higher focal 18F-FDG metabolism compared with those individuals with asymptomatic AAAs (mean SUV_{max}, 7.5 ± 0.3 vs 3.5 ± 0.6, respectively; $P < .001$).[1] As the authors themselves concluded, these results suggest that "18F-FDG PET CT imaging might be a new approach to identify AAAs at risk before acute aneurysm onset".[1] These findings support (and complete) the results of an earlier study.[2]

Based on international guidelines,[3] the main criterion for surgical treatment of AAAs is their size (≥5.5 cm); however, some AAAs rupture when they are small.[1,4] A marker for AAA wall instability (such as 18F-FDG) could help identify patients at greatest risk for AAA rupture.[1,2] Besides this, however, it would be interesting to determine whether 18F-FDG has the potential to act as a predictor of AAA growth and instability. This could be accomplished by recruiting patients with small (3.0-4.5 cm) AAAs and having them undergo a baseline 18F-FDG PET CT scan. These patients should then be followed-up by ultrasound to record AAA expansion. By repeating the 18F-FDG PET CT scan after a certain period of time (eg, 3 years), it may be possible to determine if 18F-FDG uptake is associated with AAA expansion. Such an association may hold implications for the earlier surgical management of some AAA patients (and/or the conservative management of others). In addition, such an association would help evaluate the effect of conservative measures on AAAs (eg, with statins).[5]

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Reply

In our manuscript "Increased 18F-fluorodeoxyglucose uptake in abdominal aortic aneurysms in positron emission/computed tomography is associated with inflammation, aortic wall instability, and acute symptoms," we demonstrated that fluorodeoxyglucose (FDG)-uptake may be a marker of aortic wall instability in abdominal aortic aneurysm (AAA) patients. In particular, assessment of FDG-uptake may be useful to detect small aneurysms with high risk for progression or rupture. To prove the real prognostic value of positron emission/computed tomography (PET/CT) in this context, a large prospective study with a well-defined patient collective would be useful with the best statistical power as suggested in the letter of K. I. Paraskevas. However, as commonly known in AAA formation, periods of rapid progression are interrupted by periods of stability. Consequently, the glucose metabolism may not be continuously elevated, and each patient needs to be scanned repeatedly, leading to excessive radiation exposure. In patients with low risk of rupture, this additional and potentially harmful radiation exposure seems unacceptable for ethical reasons. In contrast, patients with higher risk of rupture need to undergo early surgery. Therefore, a prospective study should focus on the small group of patients deemed as unfit for AAA repair. Alternatively, our study group tried to answer this question retrospectively, and we initiated a retrospective study about the FDG-uptake in cancer patients with concomitant AAA. Unfortunately, in this patient collective, prevalence of AAA was under-represented resulting in an undersized study cohort. Moreover in this study group, the follow-up period was limited by the short survival rates of these cancer patients. Therefore, a retrospective multicenter study might be helpful to assess the prognostic value of increased FDG up-take in small AAA without the potential harms of additional radiation exposure. Alternatively, the correlation of glucose metabolism and wall stability may be studied in a realistic animal model of AAA.

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